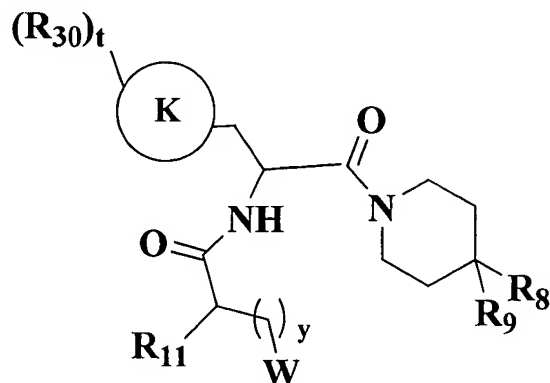


## Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A compound according to the formula



or a pharmaceutically-acceptable salt[,] or hydrate or prodrug thereof,

in which

$K$  is aryl or heteroaryl;

$R_8$  and  $R_9$  are independently hydrogen, halogen, cyano, alkyl, substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclo, aryl, heteroaryl,  $-OR_{13}$ ,  $-NR_{13}R_{14}$ ,  $-SR_{13}$ ,  $-S(O)_pR_{14}$ ,  $-C(=O)R_{13}$ ,  $-OC(=O)R_{13}$ ,  $-CO_2R_{13}$ ,  $-C(=O)NR_{13}R_{14}$ ,  $-NR_{13}C(=O)R_{14}$ ,  $-OC(=O)NR_{13}R_{14}$ ,  $-NR_{13}CO_2R_{14}$ ,  $-NR_{13}C(=O)NR_{14}R_{15}$  or  $-NR_{13}SO_2R_{14}$ ; or  $R_8$  and  $R_9$  taken together form a monocyclic or bicyclic cycloalkyl or heterocyclo joined in a spiro fashion to the piperidine ring, provided that  $R_8$  and  $R_9$  are not both hydrogen, and provided further that when  $R_8$  is  $-OR_{13}$ ,  $-(CH_2)_k$ -aryl or  $-(CH_2)_k$ -heteroaryl, then  $R_9$  is not  $-C(=O)NR_{18}R_{19}$ ,  $-CO_2R_{19}$ ,  $-(CH_2)_mNR_{18}SO_2R_{20}$ ,  $-(CH_2)_mNR_{18}C(=O)R_{20}$ ,  $-(CH_2)_mOR_{19}$ ,  $-(CH_2)_mO(C=O)R_{20}$ ,  $-CH(R_{18})R_{19}$ , or  $-(CH_2)_mNR_{18}(C=O)NR_{19}R_{21}$ ;

$R_{11}$  is selected from hydrogen, alkyl, halogen, hydroxy, hydroxyalkyl, haloalkyl, amino, aminoalkyl, alkylamino, arylalkyl, cycloalkylalkyl, heteroarylalkyl, aryl, and cycloalkyl, and where  $y$  is at least 1, then  $R_{11}$  may be heterocyclo or heterocycloalkyl;

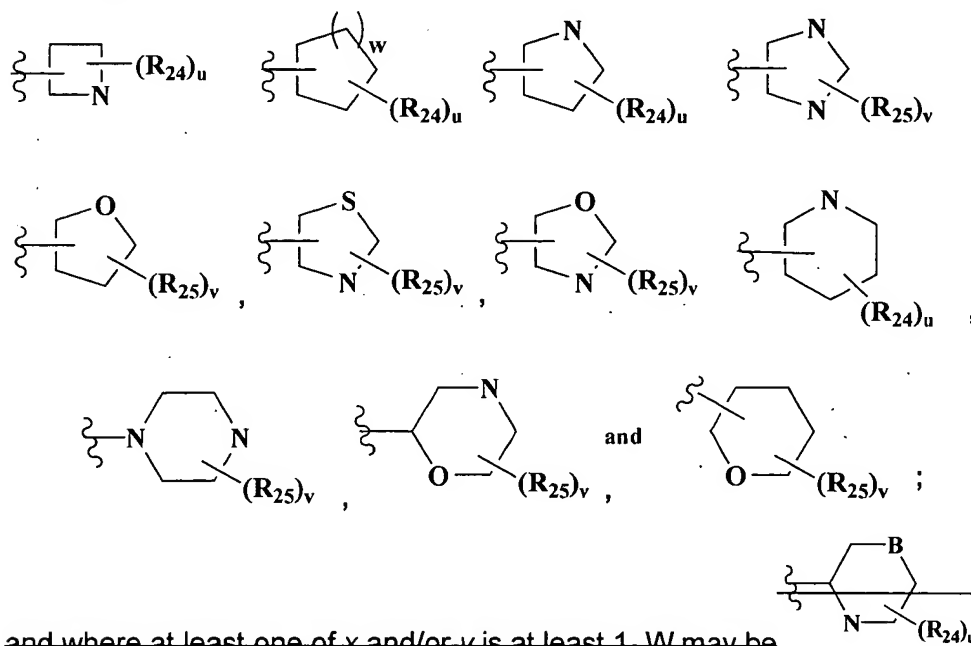
$R_{13}$ ,  $R_{14}$  and  $R_{15}$  are independently hydrogen, alkyl, substituted alkyl, cycloalkyl, aryl, heterocyclo, or heteroaryl; or  $R_{13}$  and  $R_{14}$ , or  $R_{14}$  and  $R_{15}$  may join together to form a heterocyclo or heteroaryl, except  $R_{14}$  is not hydrogen when joined to a sulfonyl group as in  $-S(O)_pR_{14}$  or  $-NR_{13}SO_2R_{14}$ ;

$W$  is selected from:

- 1)  $-NR_{16}R_{17}$ ,  $-NR_{16}C(=O)R_{22}$ ,  $-NR_{16}CO_2R_{22}$ ,  $-OR_{23}$ , amidino, and guanidino;

2) heteroaryl or heterocyclo groups selected from pyrrolyl, furyl, thienyl, imidazolyl, pyrazolyl, isoxazolyl, thiazolyl, isothiazolyl, 3-azaisothiazolyl, pyridyl, pyrazinyl, pyridazinyl, 1,2-dihydropyridazinyl, and pyranyl, wherein said heteroaryl and heterocyclo groups may be substituted or unsubstituted and may have an optionally-substituted carbocyclic, heterocyclic or heteraryl ring fused thereto; or

3) a ring selected from:



and where at least one of x and/or y is at least 1, W may be  $N$ ,  $O$  or  $S$ ;

$R_{16}$  and  $R_{17}$  are selected from hydrogen, alkyl and substituted alkyl;

$R_{18}$ ,  $R_{19}$  and  $R_{21}$  are independently hydrogen or  $C_{1-6}$ alkyl optionally substituted with halogen;

$R_{20}$  is  $C_{1-6}$ alkyl, aryl, or heteroaryl;

$R_{22}$  and  $R_{23}$  are independently selected from hydrogen, alkyl, substituted alkyl, aryl, heteroaryl, cycloalkyl, and heterocyclo;

$R_{24}$  and  $R_{25}$  at each occurrence are attached to any available carbon or nitrogen atom of W and at each occurrence are selected from hydrogen,  $C_{1-6}$ alkyl, halogen, substituted  $C_{1-6}$ alkyl, amino, alkylamino, cyano, nitro, trifluoromethoxy,  $-C(=O)R_{26}$ ,  $-CO_2R_{26}$ ,  $-SO_2R_{26}$ ,  $-OR_{26}$ , aryl, heteroaryl, heterocyclo, and cycloalkyl, and/or two  $R_{25}$  attached to two adjacent carbon atoms or adjacent carbon and nitrogen or carbon atoms may join to form a fused optionally-substituted heteroaryl, heterocyclo or cycloalkyl ring, and/or two  $R_{24}$  or two  $R_{25}$  when attached to the same carbon atom may form keto ( $=O$ );

$R_{26}$  is hydrogen, alkyl, substituted alkyl, aryl, heterocyclo, cycloalkyl, or heteroaryl, except when joined to a sulphonyl group as in  $SO_2R_{26}$ , then  $R_{26}$  is not hydrogen;

$R_{30}$  is attached to any available carbon or nitrogen atom of K and is selected from  $C_{1-4}$ alkyl, hydroxy, alkoxy, halogen, nitro, cyano, amino, alkylamino, phenyl, and  $-C(=O)$ phenyl;  
 $k$  and  $m$  are independently 0, 1, 2 or 3;  
 $p$  is 1, 2, or 3;  
 $t$  is 0, 1 or 2;  
 $u$  and  $v$  are 0, 1, 2, or 3;  
 $w$  is 0, 1, or 2;  
 $y$  is 0, 1, 2, 3, or 4; and  
 $z$  is 0, 1, or 2.

2. (canceled)

3. (Currently Amended) A compound according to claim 1 or a pharmaceutically-acceptable salt[,], or hydrate ~~or prodrug~~ thereof, in which:

W is  $-NR_{16}R_{17}$ ,  $-NHC(=O)R_{22}$ ,  $-NHCO_2$ alkyl,  $OR_{23}$ , or azetidiny;

$R_{16}$  and  $R_{17}$  are independently selected from hydrogen,  $C_{1-8}$ alkyl, and  $(CH_2)_q$ -J, wherein J is selected from naphthyl, furanyl, indolyl, imidazolyl, pyrimidinyl, benzothienyl, pyridinyl, pyrrolyl, pyrrolidinyl, thienyl, and  $C_{3-7}$ cycloalkyl, wherein the alkyl, alkylene, and/or J groups of  $R_{16}$  and/or  $R_{17}$  are optionally substituted with up to three  $R_{32}$ ;

$R_{22}$  is selected from  $C_{1-6}$ alkyl, trifluoromethyl, alkoxyalkyl, furylalkyl, alkylaminoethyl, phenyl, pyrrolylalkyl, piperidinyl, and piperidinylalkyl, wherein  $R_{22}$  in turn is optionally substituted with one to two  $C_{1-4}$ alkyl and/or  $-CO_2(C_{1-4}$ alkyl);

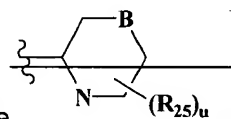
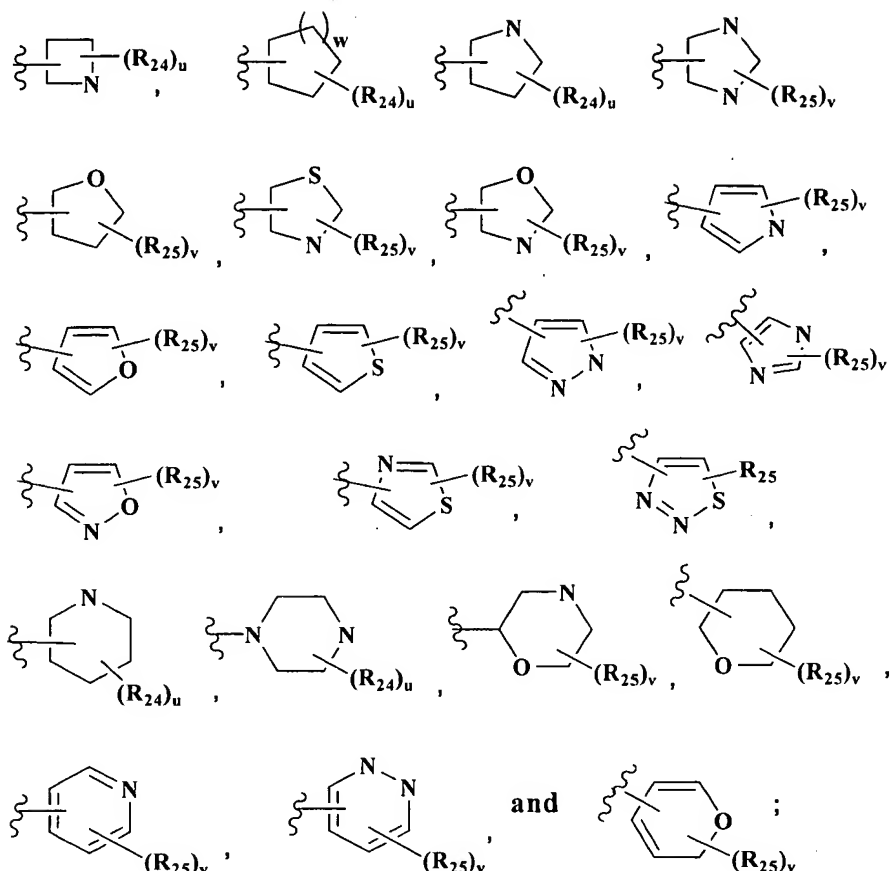
$R_{23}$  is hydrogen or phenyl;

$R_{32}$  is selected from  $C_{1-6}$ alkyl, hydroxy,  $C_{1-4}$ alkoxy, amino,  $C_{1-4}$ alkylamino, amino $C_{1-4}$ alkyl, trifluoromethyl, halogen, phenyl, benzyl, phenyloxy, benzyloxy,  $-C(=O)(CH_2)NH_2$ ,  $-CO_2(C_{1-4}$ alkyl),  $-SO_2(C_{1-4}$ alkyl), tetrazolyl, piperidinyl, pyridinyl, and indolyl, wherein when  $R_{32}$  is a ring, said ring in turn is optionally substituted with one to two  $C_{1-4}$ alkyl, hydroxy, methoxy, and/or halogen; and

$q$  is 0, 1, 2 or 3.

4. (Currently Amended) A compound according to claim 1 or a pharmaceutically-acceptable salt[,], or hydrate ~~or prodrug~~ thereof, in which

W is a ring selected from:



and where at least one of  $x$  and/or  $y$  is at least 1, W may be  $\text{S}$ ;

$R_{24}$  is selected from keto ( $=\text{O}$ ),  $\text{C}_{1-6}$ alkyl, halogen, amino, aminoalkyl, alkylamino, hydroxy,  $\text{C}_{1-4}$ alkoxy, hydroxy $\text{C}_{1-4}$ alkyl,  $-\text{C}(=\text{O})$ alkyl,  $-\text{C}(=\text{O})$ aminoalkyl,  $-\text{C}(=\text{O})$ phenyl,  $-\text{C}(=\text{O})$ benzyl,  $-\text{CO}_2$ alkyl,  $-\text{CO}_2$ phenyl,  $-\text{CO}_2$ benzyl,  $-\text{SO}_2$ alkyl,  $-\text{SO}_2$ aminoalkyl,  $-\text{SO}_2$ phenyl,  $-\text{SO}_2$ benzyl, phenyl, benzyl, phenyloxy, benzyloxy, pyrrolyl, pyrazolyl, piperidiny, pyridiny, pyrimidiny, and tetrazolyl, and each  $R_{24}$  in turn is optionally substituted with one to two  $R_{31}$ ;

$R_{25}$  at each occurrence is attached to any available carbon or nitrogen atom of W and is selected from  $\text{C}_{1-6}$ alkyl, halogen, amino, aminoalkyl, alkylamino, hydroxy,  $\text{C}_{1-4}$ alkoxy, hydroxy $\text{C}_{1-4}$ alkyl,  $-\text{C}(=\text{O})$ alkyl,  $-\text{C}(=\text{O})$ aminoalkyl,  $-\text{C}(=\text{O})$ phenyl,  $-\text{C}(=\text{O})$ benzyl,  $-\text{CO}_2$ alkyl,  $-\text{CO}_2$ phenyl,  $-\text{CO}_2$ benzyl,  $-\text{SO}_2$ alkyl,  $-\text{SO}_2$ aminoalkyl,  $-\text{SO}_2$ phenyl,  $-\text{SO}_2$ benzyl, phenyl, benzyl, phenyloxy, benzyloxy, pyrrolyl, pyrazolyl, piperidiny, pyridiny, pyrimidiny, and tetrazolyl, and/or two  $R_{25}$  when attached to adjacent carbon atoms may be taken together to form a fused benzo or pyrazolyl ring; and/or two  $R_{25}$  when attached to the same carbon

atom (in the case of a non-aromatic ring) may form keto (=O), and each  $R_{25}$  in turn is optionally substituted with up to two  $R_{31}$ ;

$R_{31}$  is selected from halogen, trifluoromethyl,  $C_{1-4}$ alkyl, hydroxy, and  $C_{1-4}$ alkoxy;

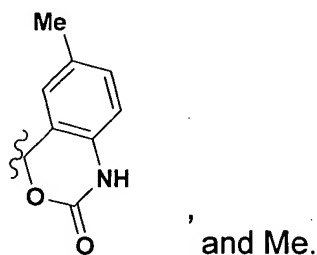
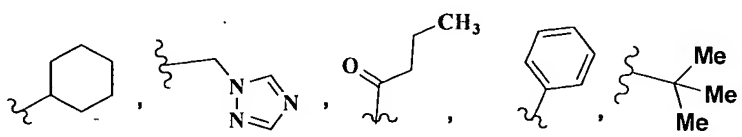
$w$  is selected from 0, 1, or 2; and

$u$  and  $v$  are selected from 0, 1, and 2.

5. (Currently Amended) A compound according to claim 1 or a pharmaceutically-acceptable salt[,], or hydrate or ~~prodrug~~ thereof, in which

$R_8$  and  $R_9$  are selected independently from hydrogen, alkyl,  $-(CH_2)_j-C(=O)alkyl$ ,  $-(CH_2)_j-phenyl$ ,  $-(CH_2)_j-naphthyl$ ,  $-(CH_2)_j-C_{4-7}cycloalkyl$ ,  $-(CH_2)_j-heterocyclo$ , and  $-(CH_2)_j-heteroaryl$ , or  $R_8$  and  $R_9$  together form a spirocycloalkyl or spiroheterocyclic ring; and  $j$  is selected from 0, 1, 2 and 3.

6. (Currently Amended) A compound according to claim or a pharmaceutically-acceptable salt[,], or hydrate or ~~prodrug~~ thereof, in which  $R^8$  and  $R^9$  are independently selected from



7. (Currently Amended) A compound according to claim or a pharmaceutically-acceptable salt[,], or hydrate or ~~prodrug~~ thereof, in which

$R_{11}$  is (i) at each occasion selected from:

- hydrogen,
- $C_{1-6}$ alkyl,
- $C_{1-6}$ alkyl substituted with up to two of hydroxy, alkoxy, amino, alkylamino, imidazolyl, pyrazolyl, phenyl, naphthyl, pyridinyl, indolyl, pyrimidyl, furyl, thiazolyl, and thienyl,

wherein said ringed substituents in turn are optionally substituted with one to three  $R_{33}$  and/or have a benzene ring fused thereto optionally substituted with one to two  $R_{33}$ ;

d)  $C_{3-7}$ cycloalkyl optionally substituted with up to two  $R_{33}$  and/or having a benzene ring fused thereto, wherein said fused benzene ring is optionally substituted with up to two  $R_{33}$ ;

e) phenyl optionally substituted with up to three  $R_{33}$ ;

f) where  $y$  is at least one,  $R_{11}$  and  $R_{12}$  may also be selected from piperidinyl, pyrrolidinyl, piperidinylalkyl, and pyrrolidinylalkyl, in turn optionally substituted with up to three  $R_{33}$ ; or

ii) alternatively, one of  $R_{11}$  and one of  $R_{12}$  attached to the same carbon atom may be taken together to form a spirocycloalkyl ring;

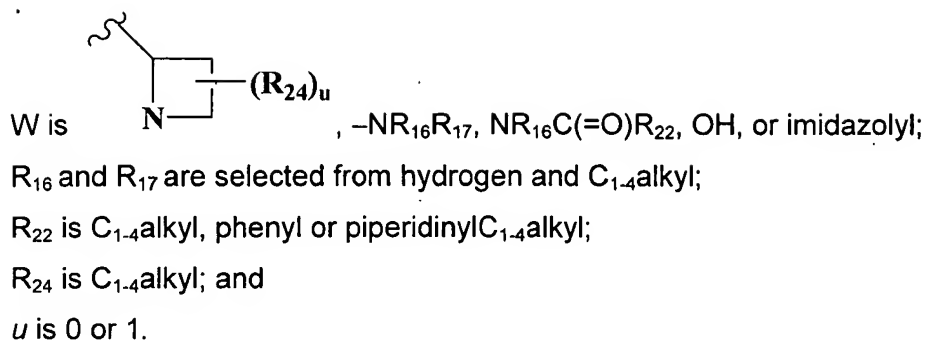
$R_{33}$  is selected from  $C_{1-6}$ alkyl, hydroxy,  $C_{1-6}$ alkoxy, halogen, nitro, phenyl, benzyl, phenyloxy, benzyloxy,  $-C(=O)$ phenyl, amino, alkylamino, and aminoalkyl, wherein when  $R_{33}$  includes a phenyl group said phenyl group in turn is optionally substituted with one to two of halogen, nitro, cyano,  $C_{1-4}$  alkyl, and/or  $C_{1-4}$  alkoxy.

8. (Currently Amended) A compound according to claim 1 or a pharmaceutically-acceptable salt[, or hydrate ~~or prodrug~~ thereof, in which  $R_2$  is selected from hydrogen,  $C_{1-6}$ alkyl,  $C_{2-6}$ alkenyl, biphenyl,  $C_{2-6}$ alkenylene-K, and  $-(CH_2)_g-K$ ; K is selected from phenyl, naphthyl, thienyl, thiazolyl, pyridinyl, pyrimidinyl, and  $C_{5-6}$ cycloalkyl, wherein each group K in turn is optionally substituted with one to three  $R_{30}$  or has a benzene ring fused thereto, which also may be substituted with one to three  $R_{30}$ ;  $R_{30}$  is selected from  $C_{1-4}$ alkyl, hydroxy, alkoxy, halogen, nitro, cyano, amino, alkylamino, phenyl, and acylphenyl; and  $g$  is 0, 1, 2 or 3.

9. (canceled)

10. (canceled)

11. (Currently Amended) A compound according to claim 1[0], or a pharmaceutically-acceptable salt[, or hydrate ~~or prodrug~~ thereof, in which



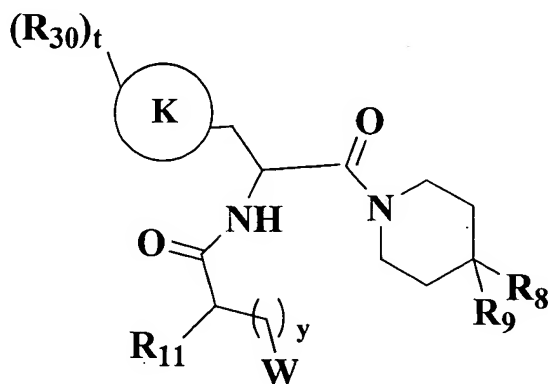
12. (Currently Amended) A compound according to claim 11 or a pharmaceutically-acceptable salt[,] or hydrate or prodrug thereof, in which

R<sub>11</sub> is hydrogen, C<sub>1-4</sub>alkyl, or imidazolylC<sub>1-4</sub>alkyl; and

~~R<sub>12</sub> is hydrogen or C<sub>1-4</sub>alkyl.~~

13. (Currently Amended) A compound according to claim 11 or a pharmaceutically-acceptable salt[,] or hydrate or prodrug thereof, in which R<sub>16</sub> and R<sub>17</sub> are independently selected from hydrogen, C<sub>1-8</sub>alkyl, and C<sub>1-8</sub>substituted alkyl, except R<sub>16</sub> and R<sub>17</sub> are not alkyl substituted with pyridyl, imidazolyl, thiazolyl, pyrimidinyl, or piperazinyl, and W is not morpholinyl.

14. (Currently Amended) A compound according to the formula,



or a pharmaceutically-acceptable salt[,] or hydrate or prodrug thereof, in which

K is aryl or heteroaryl;

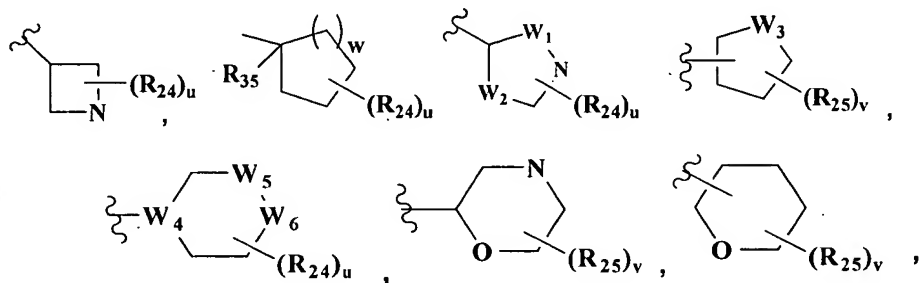
R<sub>8</sub> and R<sub>9</sub> are independently hydrogen, halogen, cyano, alkyl, substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclo, aryl, heteroaryl, -OR<sub>13</sub>, -NR<sub>13</sub>R<sub>14</sub>, -SR<sub>13</sub>, -S(O)<sub>p</sub>R<sub>14</sub>, -C(=O)R<sub>13</sub>, -OC(=O)R<sub>13</sub>, -CO<sub>2</sub>R<sub>13</sub>, -C(=O)NR<sub>13</sub>R<sub>14</sub>, -NR<sub>13</sub>C(=O)R<sub>14</sub>, -OC(=O)NR<sub>13</sub>R<sub>14</sub>, -NR<sub>13</sub>CO<sub>2</sub>R<sub>14</sub>, -NR<sub>13</sub>C(=O)NR<sub>14</sub>R<sub>15</sub> or -NR<sub>13</sub>SO<sub>2</sub>R<sub>14</sub>; or R<sub>8</sub> and R<sub>9</sub> taken together form a monocyclic or bicyclic cycloalkyl or heterocyclo joined in a spiro fashion to the piperidine ring,

$R_{11}$  is selected from hydrogen, alkyl, halogen, hydroxy, hydroxyalkyl, haloalkyl, amino, aminoalkyl, alkylamino, arylalkyl, cycloalkylalkyl, heteroarylalkyl, aryl, and cycloalkyl, and where  $y$  is at least 1, then  $R_{11}$  may be heterocyclo or heterocycloalkyl;

$R_{13}$ ,  $R_{14}$  and  $R_{15}$  are independently hydrogen, alkyl, substituted alkyl, cycloalkyl, aryl, heterocyclo, or heteroaryl; or  $R_{13}$  and  $R_{14}$ , or  $R_{14}$  and  $R_{15}$  may join together to form a heterocyclo or heteroaryl, except  $R_{14}$  is not hydrogen when joined to a sulfonyl group as in  $-S(O)_pR_{14}$  or  $-NR_{13}SO_2R_{14}$ ;

$W$  is selected from:

- 1)  $-NR_{16}R_{17}$ ,  $-NR_{16}C(=O)R_{22}$ ,  $-NR_{16}CO_2R_{22}$ , or  $-OR_{23}$ ; or
- 2) heteroaryl or heterocyclo groups selected from pyrrolyl, furyl, thienyl, imidazolyl, pyrazolyl, isoxazolyl, thiazolyl, isothiazolyl, 3-azaisothiazolyl, pyridyl, pyrazinyl, pyridazinyl, 1,2-dihydropyridazinyl, and pyranyl, wherein said heteroaryl and heterocyclo groups may be optionally substituted with one to three  $R_{36}$ , and may have an optionally-substituted carbocyclic, heterocyclic or heteraryl ring fused thereto; or
- 3) a carbocyclic, heterocyclic, or heteroaryl ring selected from:



in which  $W_1$  and  $W_2$  are NH,  $CH_2$ , O or S,  $W_3$  is O or S,  $W_4$  is N or CH, and  $W_5$  and  $W_6$  are NH or  $CH_2$ , wherein when  $W_1$ ,  $W_2$ ,  $W_5$  and  $W_6$  are NH or  $CH_2$ , said groups are optionally substituted with  $R_{24}$ ;

$R_{16}$  and  $R_{17}$  are  $C_{1-8}$ alkyl or  $(CH_2)_q-J$ , wherein  $J$  is selected from aryl, heteroaryl, heterocyclo, and cycloalkyl, wherein the alkyl, alkylene, and/or  $J$  groups of  $R_{16}$  and/or  $R_{17}$  are optionally substituted with up to three  $R_{32}$ ;

$R_{22}$  is selected from  $C_{1-6}$ alkyl, trifluoromethyl, alkoxyalkyl, furylalkyl, alkylaminoethyl, phenyl, pyrrolylalkyl, piperidiny, and piperidinylalkyl, wherein  $R_{22}$  in turn is optionally substituted with one to two  $C_{1-4}$ alkyl and/or  $-CO_2(C_{1-4}alkyl)$ ;

$R_{23}$  is hydrogen or aryl;

$R_{24}$  and  $R_{25}$  at each occurrence are attached to any available carbon or nitrogen atom of  $W$  and at each occurrence are selected from hydrogen,  $C_{1-6}$ alkyl, halogen, substituted  $C_{1-6}$ alkyl, amino, alkylamino,  $-C(=O)R_{26}$ ,  $-CO_2R_{26}$ ,  $-SO_2R_{26}$ ,  $-OR_{26}$ , aryl, heteroaryl, heterocyclo, and cycloalkyl, and/or two  $R_{25}$  attached to two adjacent carbon atoms or adjacent carbon and



nitrogen atoms may be taken together to form a fused optionally-substituted heteroaryl, heterocyclo or cycloalkyl ring, and/or two R<sub>24</sub> or two R<sub>25</sub> when attached to the same carbon atom may form keto (=O);

R<sub>26</sub> is hydrogen, alkyl, phenyl, benzyl, or aminoalkyl, except when joined to a sulphonyl group as in SO<sub>2</sub>R<sub>26</sub>, then R<sub>26</sub> is not hydrogen;;

R<sub>32</sub> is selected from C<sub>1-6</sub>alkyl, hydroxy, C<sub>1-6</sub>alkoxy, halogen, nitro, phenyl, benzyl, phenyloxy, benzyloxy, -C(=O)phenyl, amino, alkylamino, and aminoalkyl, wherein when R<sub>32</sub> includes a phenyl group said phenyl group in turn is optionally substituted with one to two of halogen, nitro, cyano, C<sub>1-4</sub> alkyl, and/or C<sub>1-4</sub> alkoxy;

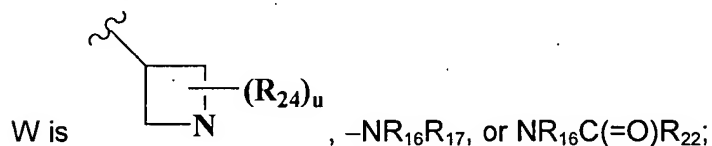
R<sub>35</sub> and R<sub>36</sub> at each occurrence is selected from C<sub>1-6</sub>alkyl, halogen, substituted C<sub>1-6</sub>alkyl, hydroxy, alkoxy, cyano, trifluoromethyl, trifluoromethoxy, nitro, acyl, carboxyalkyl, sulfonyl, aryl, heteroaryl, heterocyclo, and cycloalkyl;

*p* is 1, 2 and 3;

*u* and *v* are 0, 1, or 2; and

*w* is 0, 1, or 2.

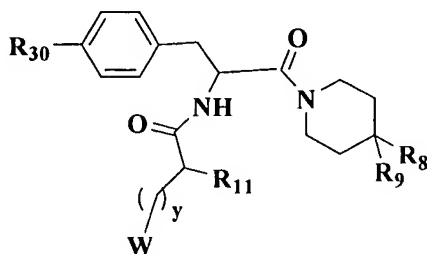
15. (Currently Amended) A compound according to claim 14 or a pharmaceutically-acceptable salt[,], or hydrate ~~or prodrug~~ thereof, in which



R<sub>24</sub> is C<sub>1-4</sub>alkyl;

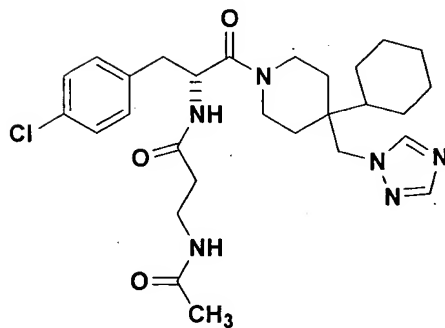
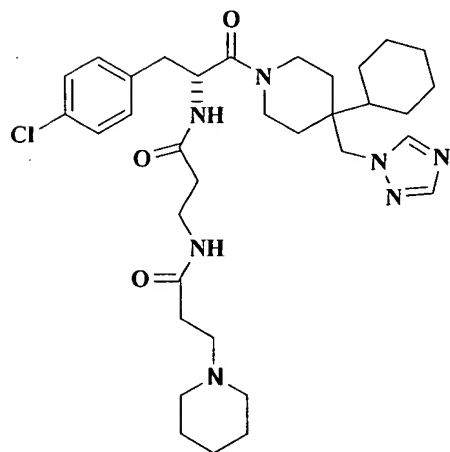
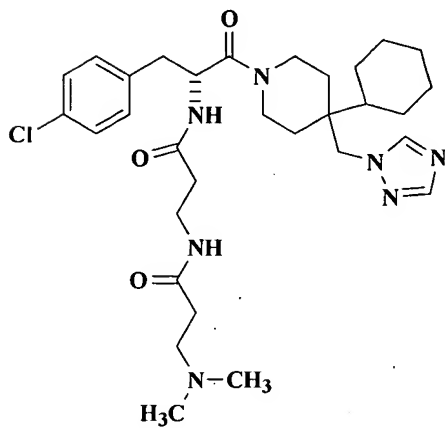
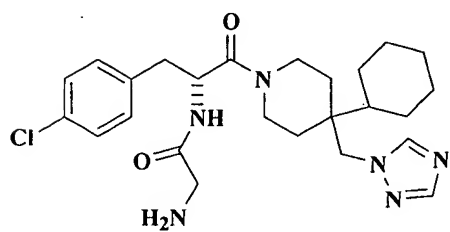
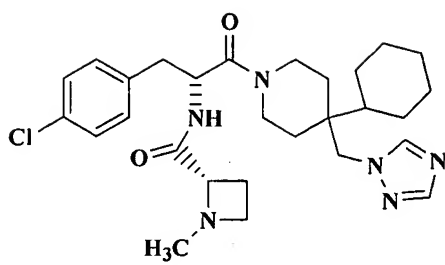
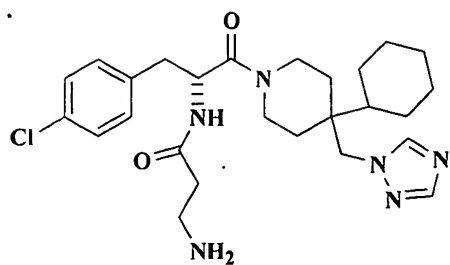
*u* is 0 or 1.

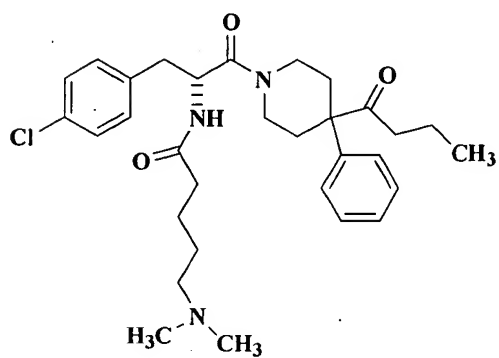
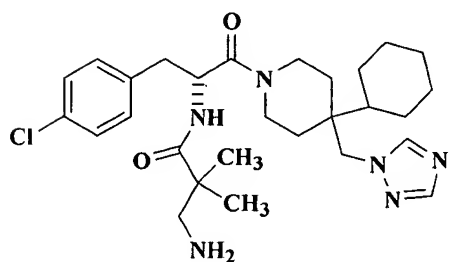
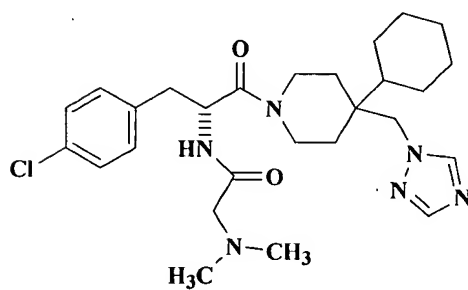
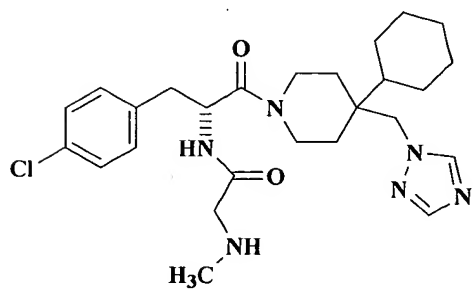
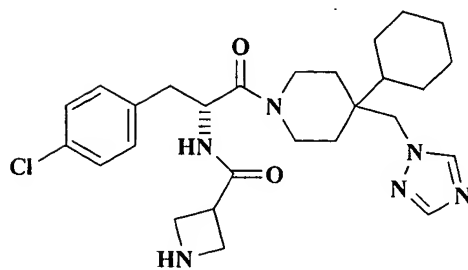
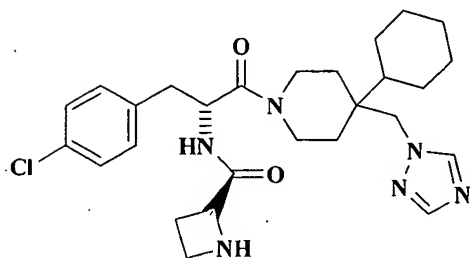
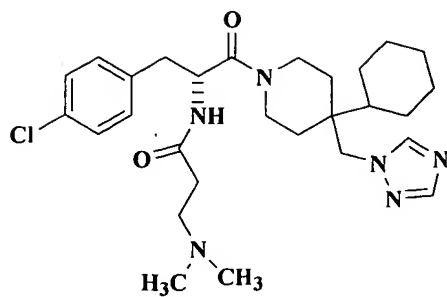
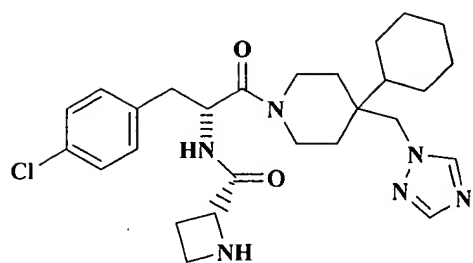
16. (Currently Amended) A compound according to claim 14, or a pharmaceutically-acceptable salt[,], or hydrate ~~or prodrug~~ thereof, having the formula,



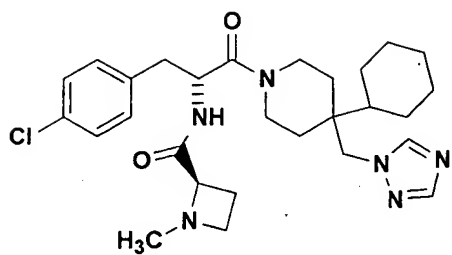
in which *y* is 0, 1 or 2 and R<sub>30</sub> is halogen or methoxy.

17. (Currently Amended) A compound ~~according to claim 1~~, having the formula,





or



or a pharmaceutically-acceptable salt[,] or hydrate ~~or prodrug~~ thereof.

18. (Previously Amended) A pharmaceutical composition comprising a therapeutically effective amount of at least one compound according to claim 1 or a pharmaceutically-acceptable salt, hydrate or prodrug thereof, and a pharmaceutically-acceptable carrier or diluent.

19. (Original) A pharmaceutical composition comprising (i) at least one compound according to claim 1 or a pharmaceutically-acceptable salt, hydrate or prodrug thereof, (ii) at least one second compound effective for treating an inflammatory or immune disease, a cardiovascular disease, or neurodegenerative disorder; and (iii) a pharmaceutically-acceptable carrier or diluent.

20. (Original) The pharmaceutical composition according to claim 19 in which the at least one second compound comprises a phosphodiesterase inhibitor.

21. (Previously Amended) A method of treating a melanocortin-receptor associated condition by agonizing melanocortin receptors, the method comprising administering to a warm-blooded species in need of such treatment a therapeutically-effective amount of at least one compound according to claim 1.

22. (Original) The method of claim 21 in which the melanocortin-receptor associated condition is an MC-1R or MC-4R associated condition.